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EXAMINER				
KEE, FANNIE C				
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

# Office Action Summary

**Application No.**

10/540,870

**Applicant(s)**

KANAGAE ET AL.

**Examiner**

Fannie Kee

**Art Unit**

3679

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 09 March 2006.  
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.  
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 22-29 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.  
6) ☒ Claim(s) 22-29 is/are rejected.  
7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.  
8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.  
10) ☒ The drawing(s) filed on 09 March 2006 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☒ All b) ☐ Some \* c) ☐ None of:  
1. ☒ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)  
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)  
3) ☒ Information Disclosure Statement(s) (PTO-8508)  
Paper No(s)/Mail Date \_\_\_\_\_  
4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_  
5) ☐ Notice of Informal Patent Application  
6) ☐ Other: \_\_\_\_\_

**DETAILED ACTION**

***Drawings***

1. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, a space between the hollow part of the housing and the outer circumference of the shaft forming the first part of the second groove, an end surface on the front end of the housing and a clearance facing the end surface of the main body of the second connecting hollow member forming the second part of the second groove and a sheet-shaped second deal being fit at the second part of the second groove must be shown or the features canceled from claim 28. No new matter should be entered.
2. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, a second groove having a first part and second part continuing from the first part and having a smaller cross section than that of the first part being annularly formed at the periphery of the shaft along a direction of leakage of the CO<sub>2</sub> gas on either of the end surface of the front end of the housing or the end surface of the main body of the second connecting hollow member and a sheet-shaped second deal being fit at the second part of the second groove must be shown or the features canceled from claim 29. No new matter should be entered.
3. The drawings are objected to because in Figures 1 and 2, there is extraneous written matter - "CO<sub>2</sub>". The extraneous written matter should be designated by reference element

numbers on the drawings whereas the description of those elements should be in the specification.

4. The drawings are also objected to because in Figures 1, 2, 3A-3C, 4, 5A-5B, 7A-7B, 8A-8B, 9A-9B, 10, 11, and 13-15, the cross-hatching pattern is incorrect for seals "11" and "13".

See MPEP 608.02 for the correct cross-hatching pattern.

5. The drawings are also objected to because in Figures 2 and 4, the cross-hatching is missing from these figures. See MPEP 608.02.

6. The drawings are also objected to because in Figure 3B, the section line markings are incorrect.

7. The drawings are also objected to because in Figure 5A, reference element "17W1" should be --17W--.

8. The drawings are also objected to because in Figures 6A-6C, it is unclear why schematic views include cross-hatching.

9. The drawings are also objected to because in Figure 12, the cross-hatching pattern for the seal "151" is incorrect. See MPEP 608.02 for the correct cross-hatching pattern.

10. The drawings are also objected to because in Figure 13, the cross-hatching pattern for the seal "110" is incorrect. See MPEP 608.02 for the correct cross-hatching pattern.

11. The drawings are also objected to because in Figure 14, the cross-hatching pattern for the seal "251" is incorrect. See MPEP 608.02 for the correct cross-hatching pattern.

12. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: "350" (page 60, line 18) and "351" (page 62, line 3).

13. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description: Figure 9B - "53W1" and "53W2". -

14. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the

renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

***Specification***

15. The abstract of the disclosure is objected to because:
  - a. The abstract should not speak to the purported merits of the invention - "able to simply and effectively seal connected members even when using a seal member through which a gas easily permeates" in lines 1-3.
  - b. The reference elements should either be enclosed by parenthesis or deleted from the abstract.
  - c. Because of minor grammatical errors:
    - i. Line 4 – add the word --which-- before the word "provides".
    - ii. Line 6 - add the word --has-- before the words "an O-ring".
    - iii. Line 8 – replace the word "and" with the words --is formed in--.
    - iv. Line 9 – replace the word "it" with the words --the connector device--.

Correction is required. See MPEP § 608.01(b).

16. The disclosure is objected to because of the following informalities:

- d. Page 9, line 1 – delete the phrase “and its partially enlarged view” as there is no enlarged view shown in Figure 12.
- e. Page 9, line 20 - delete the “s” from the end of the word “embodiments”.
- f. Page 13, line 8 – replace “third hollow part 73” with --second hollow part 72--.
- g. Page 14, line 15 – replace “third hollow part 93” with --third hollow part 73--.
- h. Page 16, line 1 – add an --s-- to the end of the word “side”.
- i. Page 18, line 2 – replace “FIG. 3A” with --FIG. 3B--.
- j. Page 18, line 17 – add a period to the end of the sentence.
- k. Page 21, line 6 and Page 57, line 7 – define the acronyms – “PEEK”, “PPS”, “LCP”.
- l. Page 21, line 13 – replace the word “it” with --fit--.
- m. Page 29, line 17 - delete the “G” from “G19G1”.
- n. Page 29, line 25 - replace “17T” with --17W1--.
- o. Page 30, line 5 - replace “17B” with --17b--.
- p. Page 30, line 10 - replace “13” with --13A--.
- q. Page 30, line 16 - replace “3A” with --5A--.
- r. Page 35, line 16 - replace “rubber sheet 36” with --rubber sheet 35--.
- s. Page 45, line 22 - replace the word “prevents” with --preventing--.
- t. Page 56, lines 19-20 – is this phrase correct - “[t]he seal member 151 has the same diameter as a second hollow part 1572 and the fourth hollow part 492”?

- u. Page 60, line 18 – reference element “350” is not shown in the drawings.
- v. Page 60, line 23 - replace the word “fourth” with --second--.
- w. Page 62, line 3 – reference element “351” is not shown in the drawings.
- x. Page 62, line 14 – add the word --of-- before the words “the mode”.

Correction is required.

### *Claim Objections*

17. It is suggested to Applicant to remove the drawing element numbers from the claims to avoid confusion.

18. Applicant is advised that should claim 25 be found allowable, claim 26 will be objected to under 37 CFR 1.75 as being a substantial duplicate thereof. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

19. Claim 1 is objected to because of the following informalities: replace the word “forms” with --forming-- in line 8; replace the word “has” with --having-- in line 13; replace the word “moves” with --moving-- in line 24; and, replace the word “is” with --being-- in line 29.

Correction is required.

20. Claim 24 is objected to because of the following informalities: replace the words "connector device" with --CO<sub>2</sub> gas seal device--.

Correction is required.

21. Claim 25 is objected to because of the following informalities: replace the word "is" with --being-- in line 13; replace the word "with" with --into-- in line 14; replace the word "is" with --being-- in line 15; replace the word "is" with --being-- in line 24; and, replace the word "is" with --being-- in line 27.

Correction is required.

22. Claim 26 is objected to because of the following informalities: replace the word "is" with --being-- in line 11; replace the word "with" with --into-- in line 12; replace the word "is" with --being-- in line 15; replace the word "is" with --being-- in line 24; and, replace the word "is" with --being-- in line 27.

Correction is required.

23. Claim 27 is objected to because of the following informalities: replace the word "is" with --being-- in lines 6 and 9.

Correction is required.

24. Claim 28 is objected to because of the following informalities: replace the word "form" with --forming-- in line 8; and, replace the word "is" with --being-- in line 10.

Correction is required.

25. Claim 29 is objected to because of the following informalities: replace the word "is" with --being-- in line 10.

Correction is required.

***Claim Rejections - 35 USC § 112***

26. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

27. Claims 22-29 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 22 recites "the connection of said first and second connecting hollow members (7, 9) forming a connection part having a hollow part for passing the CO<sub>2</sub> gas through it between said first connecting hollow member and said second connecting hollow member". How do the first and second connecting hollow members form a connection part? What does Applicant mean by "connection part"? Does Applicant mean that they are connected or does Applicant mean that the first and second hollow members have connecting fluid paths? It is unclear what Applicant means by this statement. Also, how are these two members connected? It is not clear how the first and second connecting members stay together after they are connected. Examiner

is interpreting that the connection part means that there is fluid communication between the first and second hollow members and that any convenient method of connecting these two members would meet the limitation of the claim.

Claim 22 also recites "said backup ring having an inclined surface contacting the tapered surface of the second part of said groove, being enlarged in a diametrical direction at the second part of said groove by said CO<sub>2</sub> gas, the deformation of said O-ring (11), and a pressing action by the movement, and moves over the second part of said groove". What does Applicant mean by "a pressing action by the movement"? What is the movement that Applicant is referring to? The movement of what? Does Applicant mean the movement of the o-ring or the gas? Examiner is interpreting that as long as the backup ring is capable of being enlarged in a diametrical direction the claim limitation has been met.

Claim 22 further recites "the inclined surface of the first gas seal member". There is insufficient antecedent basis for this limitation in the claim.

Claim 25 recites "said first connecting hollow part" and "said second connecting hollow part". There is insufficient antecedent basis for these limitations in the claim. Did Applicant mean to say "member" instead of "part"?

Claim 25 also recites "a groove (19G) is formed positioned between the outer circumference of said shaft (19) and the inner wall of the hollow part (73) of said housing (17)

and having a first part (19B) into which said CO<sub>2</sub> gas is introduced on the outer circumference of said shaft (19) or the inner wall of the hollow part (73) of said housing (17) along a direction of flow of said CO<sub>2</sub> gas and a second part (19T) which continues from the first part, has a smaller cross section than the cross section of said first part, and from which said pressurized gas is discharged, said O-ring (11) is arranged at the first part of said groove contacting the outer circumference of said shaft (19) and the inner wall of the hollow part (73) of said housing (17), and said backup ring (13) is arranged at the second part of said groove". Is Applicant claiming that there is a SECOND groove between the first and second connecting members? This is not shown in the drawing nor is it clear how there is a second groove. It appears that Applicant is trying to claim the same groove that was previously claimed in claim 22 as Applicant recites that the o-ring and backup ring fit into this groove. Applicant appears to be locating the groove based on additional structural details for the first and second connecting hollow parts or members. Is that the case? Examiner is interpreting that the groove being claimed in claim 25 is the same groove being claimed in claim 22.

Claim 26 recites "said first connecting hollow part" and "said second connecting hollow part". There is insufficient antecedent basis for these limitations in the claim. Did Applicant mean to say "member" instead of "part"?

Claim 28 recites "the first part of the second groove" and "the second part of said second groove". There is insufficient antecedent basis for these limitations in the claim. What second

groove is Applicant referring to? No second groove has been recited by Applicant previously.  
Examiner is interpreting that as long as

***Claim Rejections - 35 USC § 102***

28. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

29. Claims 22-27 are rejected under 35 U.S.C. 102(b) as being anticipated by Scaramucci U.S. Patent No. 3,089,713.

With regard to claim 22, and as seen in Figure 2, Scaramucci discloses a CO<sub>2</sub> gas seal device comprising:

means (54, 42) for sealing the CO<sub>2</sub> gas; and

first and second connecting hollow members (14, 15 - parts connecting to these threads),  
the connection of said first and second connecting hollow members forming a connection part having a hollow part for passing the CO<sub>2</sub> gas through it between said first connecting hollow member and said second connecting hollow member and forms a groove (44) at a gas leakage part in the connection part,

said groove having a first part and a second part connected to the first part and having a sectional area smaller than that of the first part along the direction of leakage of said CO<sub>2</sub> gas, the

second part has a tapered surface inclined so that its thickness becomes smaller along the direction of leakage of said CO<sub>2</sub> gas,

said gas sealing means having an O-ring (54) made of rubber arranged at the first part of said groove and one backup ring (42) made of 46Nylon arranged at the second part of said groove,

said backup ring having an inclined surface contacting the tapered surface of the second part of said groove, being enlarged in a diametrical direction at the second part of said groove by said CO<sub>2</sub> gas, the deformation of said O-ring, and a pressing action by the movement, and moves over the second part of said groove,

an angle of said inclined surface of said backup ring being larger than the angle of the tapered surface of the second part of said groove, the inclined surface of the first gas seal member is crushed at the time of the pressing action by said CO<sub>2</sub> gas to further narrow the clearance of said second part, and

a front end of the second part of said groove being provided with a clearance from which said backup ring can be projected.

*Note, the CO<sub>2</sub> gas is not a part of the claimed invention.*

*Note, the method of forming the device is not germane to the issue of patentability of the device itself. Therefore, this limitation is given little patentable weight.*

With regard to claim 23, and as seen in Figure 2, Scaramucci discloses said O-ring (54) arranged at the first part of said groove and the backup ring (42) arranged at the second part of

said groove are deformed due to a pressure difference along a direction of gas leakage of said CO<sub>2</sub> gas.

*Note, the CO<sub>2</sub> gas is not a part of the claimed invention.*

*Note, the method of forming the device is not germane to the issue of patentability of the device itself. Therefore, this limitation is given little patentable weight.*

With regard to claim 24, and as seen in Figure 2, Scaramucci discloses said CO<sub>2</sub> gas being heated, and said O-ring and said backup ring (54, 42) being heated by the temperature of said heated CO<sub>2</sub> gas and further expand and deform inside said groove.

*Note, the CO<sub>2</sub> gas is not a part of the claimed invention.*

*Note, the method of forming the device is not germane to the issue of patentability of the device itself. Therefore, this limitation is given little patentable weight.*

With regard to claim 25, and as seen in Figure 2, Scaramucci discloses:

said first connecting hollow part (14 – part connected to these threads) having

a first main body and

a housing formed integrally with the first main body and having a hollow part,

said second connecting hollow part (15 - part connected to these threads) having

a second main body and

a shaft (28) formed integrally with the second main body, having a hollow part,

and having a shaft having an outside diameter enabling insertion into the hollow part of said housing,

said shaft being inserted with a predetermined clearance with an inner wall of the hollow part of said housing so that the hollow part of said shaft faces the hollow part of said housing,

a groove (28) being formed positioned between the outer circumference of said shaft and the inner wall of the hollow part of said housing and having a first part into which said CO<sub>2</sub> gas is introduced on the outer circumference of said shaft or the inner wall of the hollow part of said housing along a direction of flow of said CO<sub>2</sub> gas and a second part which continues from the first part, has a smaller cross section than the cross section of said first part, and from which said pressurized gas is discharged,

said O-ring (54) being arranged at the first part of said groove contacting the outer circumference of said shaft and the inner wall of the hollow part of said housing, and

said backup ring (42) being arranged at the second part of said groove.

*Note, the CO<sub>2</sub> gas is not a part of the claimed invention.*

*Note, the method of forming the device is not germane to the issue of patentability of the device itself. Therefore, this limitation is given little patentable weight.*

With regard to claim 26, and as seen in Figure 2, Scaramucci discloses:

said first connecting hollow part (14 – part connected to these threads) having a first main body and a housing formed integrally with the first main body and having a hollow part,

said second connecting hollow part (15 - part connected to these threads ) having a second main body and a shaft (28) formed integrally with the second main body, having a hollow part, and having a shaft having an outside diameter enabling insertion into the hollow part of said housing,

said shaft (28) being inserted with a predetermined clearance with an inner wall of the hollow part of said housing so that the hollow part of said shaft (faces the hollow part of said housing,

said groove (44) being defined positioned between the outer circumference of said shaft and the inner wall of the hollow part of said housing and having a first part into which said CO<sub>2</sub> gas is introduced on the outer circumference of said shaft or the inner wall of the hollow part of said housing along a direction of flow of said CO<sub>2</sub> gas and a second part which continues from the first part, has a smaller cross section than the cross section of said first part, and from which said pressurized gas is discharged,

said O-ring (54) being arranged at the first part of said groove contacting the outer circumference of said shaft and the inner wall of the hollow part of said housing, and

said backup ring (42) being arranged at the second part of said groove.

*Note, the CO<sub>2</sub> gas is not a part of the claimed invention.*

*Note, the method of forming the device is not germane to the issue of patentability of the device itself. Therefore, this limitation is given little patentable weight.*

With regard to claim 27, and as seen in Figure 2, Scaramucci discloses:

the second part of said groove (44) being inclined so as to become shallower than a depth of said first part in a direction of discharge of said gas,

the angle of said inclined surface of said backup ring (42) contacting the second part of said groove being larger than the angle of the inclined surface of the second part of said groove,

and the front end of the inclined surface of the first gas seal member being crushed at the time of the pressing action by said pressurized gas to further narrow the clearance of said second part.

*Note, the CO<sub>2</sub> gas is not a part of the claimed invention.*

*Note, the method of forming the device is not germane to the issue of patentability of the device itself. Therefore, this limitation is given little patentable weight.*

#### ***Allowable Subject Matter***

30. Claims 28 and 29 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

With regard to claim 28, the prior art of record does not teach or suggest that a space between the hollow part of the housing and the outer circumference of the shaft forms the first part of a second groove, an end surface on the front end of said housing and a clearance facing the end surface of the main body of the second connecting hollow member forming the second part of the second groove, and a sheet-shaped second seal being fitted at the second part of the second groove in combination with the CO<sub>2</sub> gas seal device of claims 22, 26, and 27.

With regard to claim 29, the prior art of record does not teach or suggest a second groove having a first part and a second part continuing from the first part and having a smaller cross section than that of the first part being annularly formed at the periphery of the shaft along a

direction of leakage of CO<sub>2</sub> gas on either of an end surface of the front end of the housing or an end surface of the main body of the second connecting hollow member, and a sheet-shaped second seal member being fitted at the second part of the second groove in combination with the CO<sub>2</sub> gas seal device of claims 22, 26, and 27.

### ***Conclusion***

31. Brownell, Jackman, Simonini, Franck, Bawa, and Ekman are being cited to show examples of the general mechanical state of the art.

32. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Fannie Kee whose telephone number is (571) 272-1820. The examiner can normally be reached on 8:30 am to 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Daniel P. Stodola can be reached on (571) 272-7087. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Aaron M Dunwoody/  
Primary Examiner, Art Unit 3679

/F. K./  
Examiner, Art Unit 3679  
October 1, 2008